



Armed Forces College of Medicine AFCM



Posterior compartment of leg

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INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Define attachment and structures passing behind flexor retinaculum
2. Describe the attachment, action and nerve supply of muscles of back leg; superficial and deep
3. Describe root value origin, course and branches of posterior tibial nerve
4. State beginning, course and branches of posterior tibial artery

Lecture Plan



1. Part 1 posterior compartment
2. Muscles , nerves and vessels of posterior compartment
3. Part 3 Summary
4. Lecture Quiz

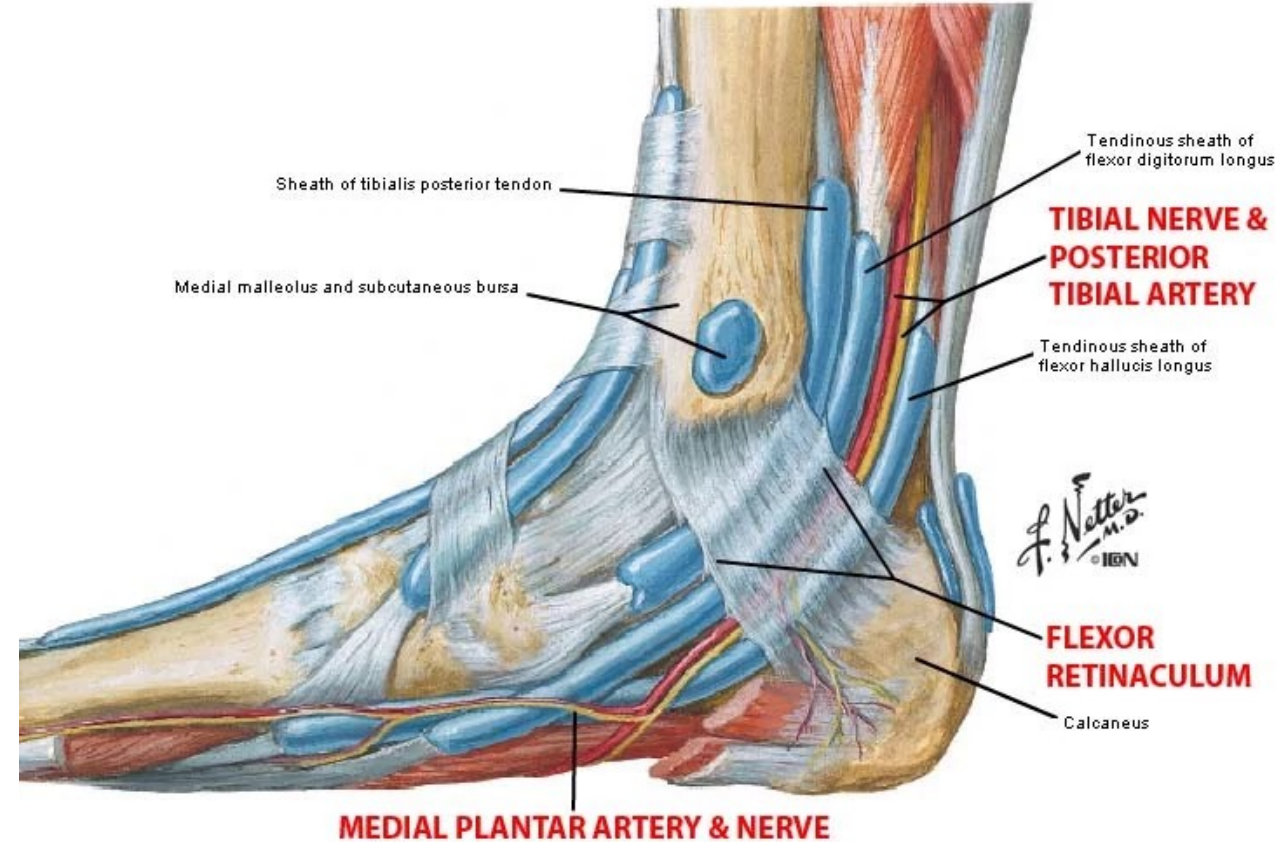
Flexor retinaculum



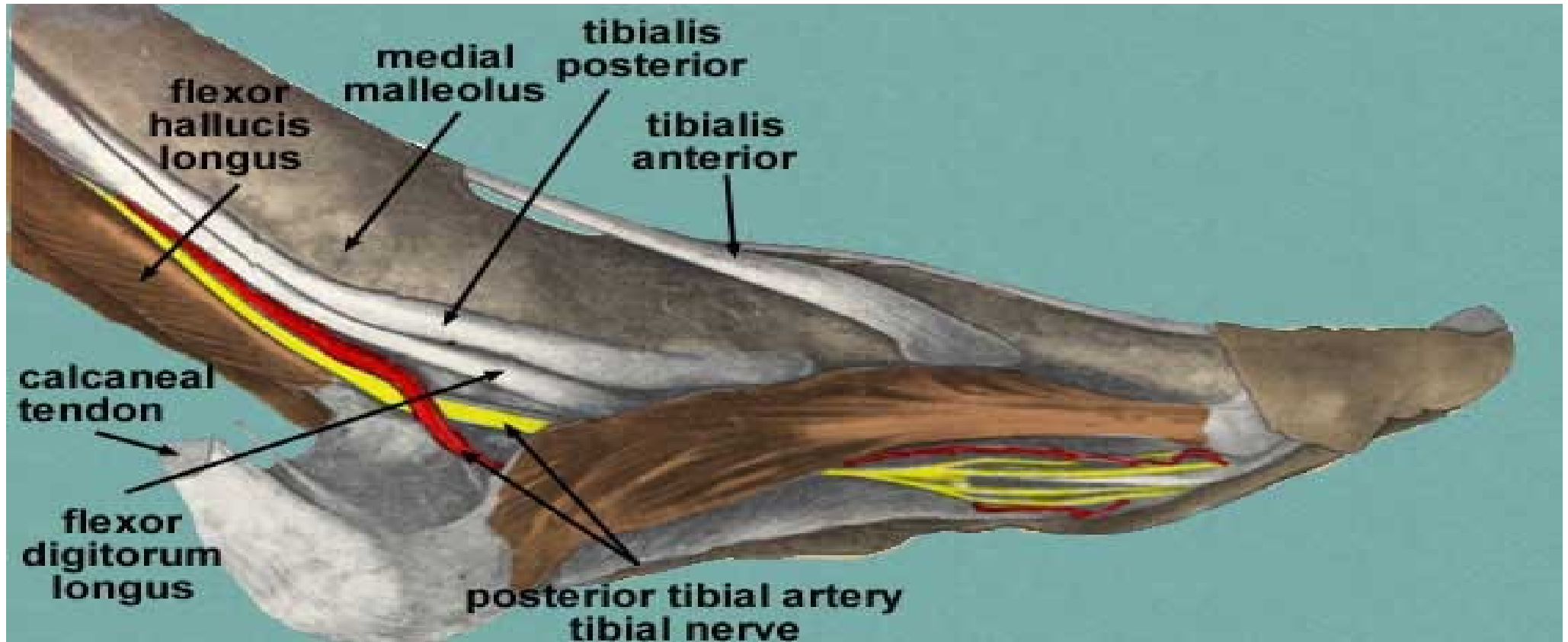
❖ It is on the **medial side** of the ankle behind the **medial malleolus**.

❖ Ant. attached to the posterior border of the **medial malleolus**

❖ Post. attached to the medial process of the **calcanean tuberosity** and is cont. with the **planter aponeurosis**.



<https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiTs>



Tom does very nice hats



MUSCLES OF THE BACK ARE ARRANGED INTO 2 GROUPS

SUPERFICIAL

- Gastrocnemius
- Soleus
- plantaris

Deep

- Popliteus
- Flexor digitorum longus
- Flexor hallucis longus

Posterior compartment

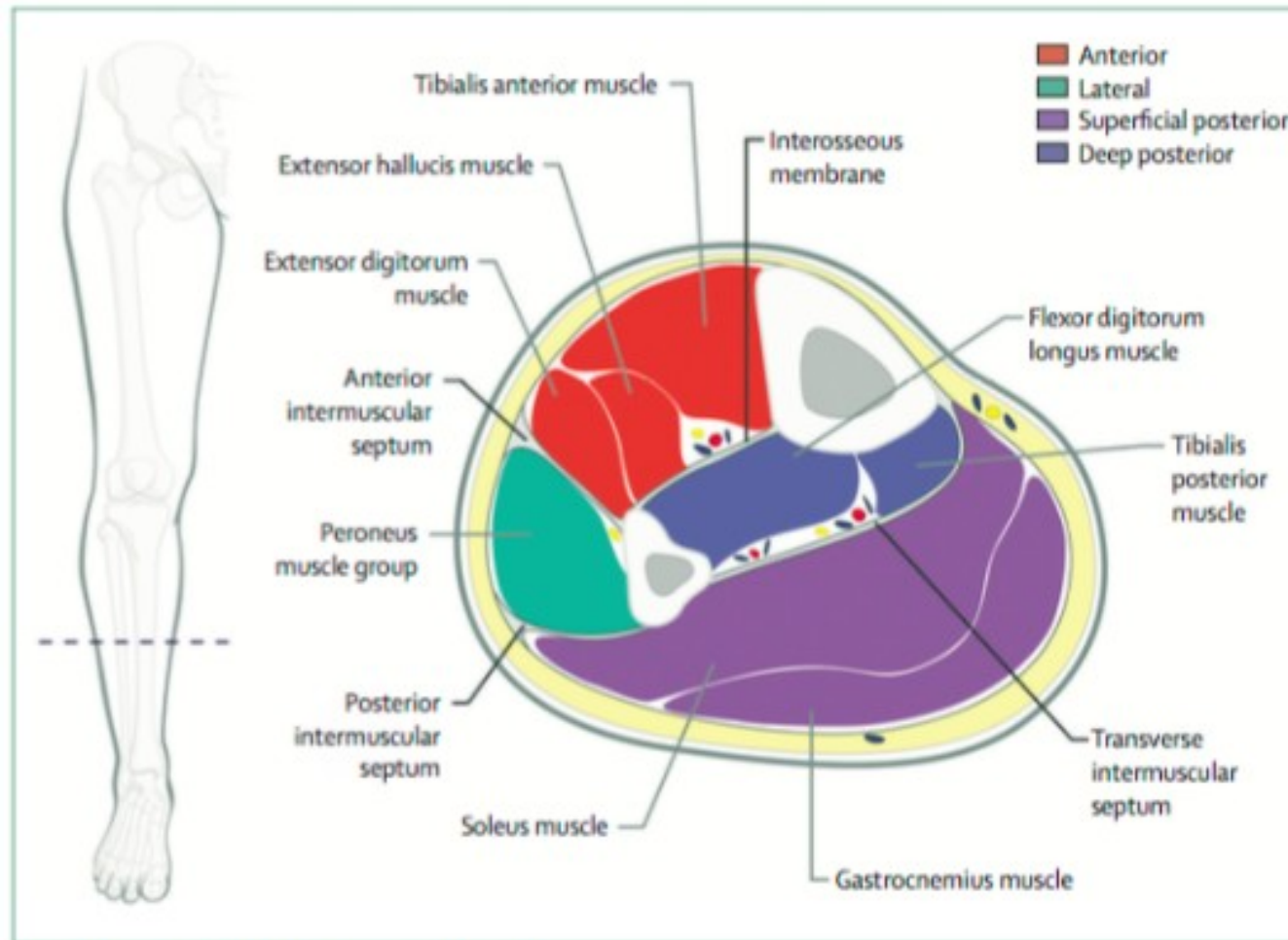


Figure 3: Cross-sectional anatomy of the calf

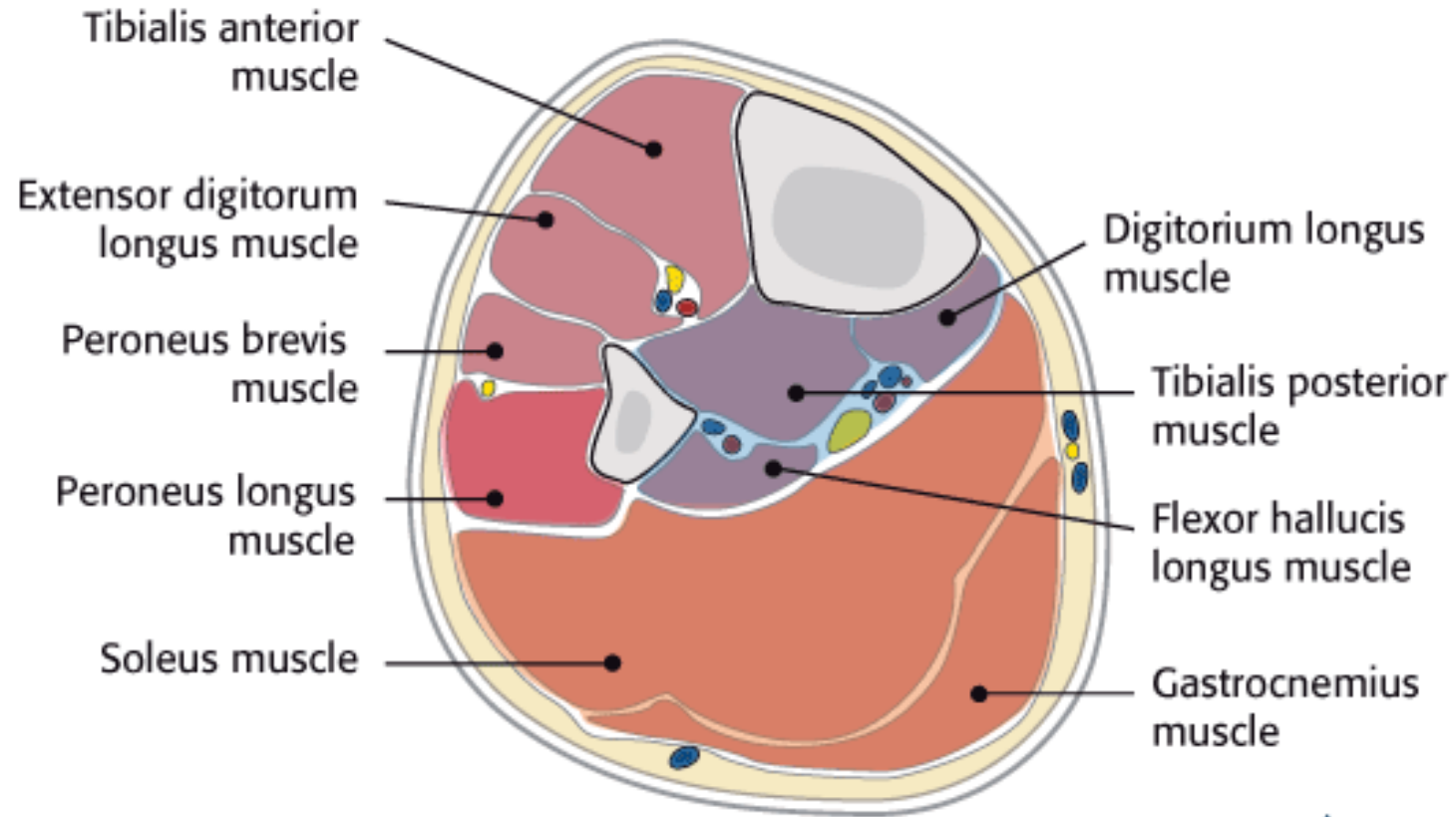
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Divisions of posterior compartment



- First septum lies between superficial and deep muscles
- Second septum separates deep group into an area for flexor hallucis longus and flexor digitorum and posterior tibial vessels and tibial nerve and area for tibialis posterior

Posterior compartment



<https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=10308170932>

Gastrocnemius



- Medial head from rough area above medial epicondyle
- Lateral head from the lateral surface of the lateral femoral condyle

➤ ***Middle third of calcaneus***



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Soleus



Origin

From the back of head of fibula

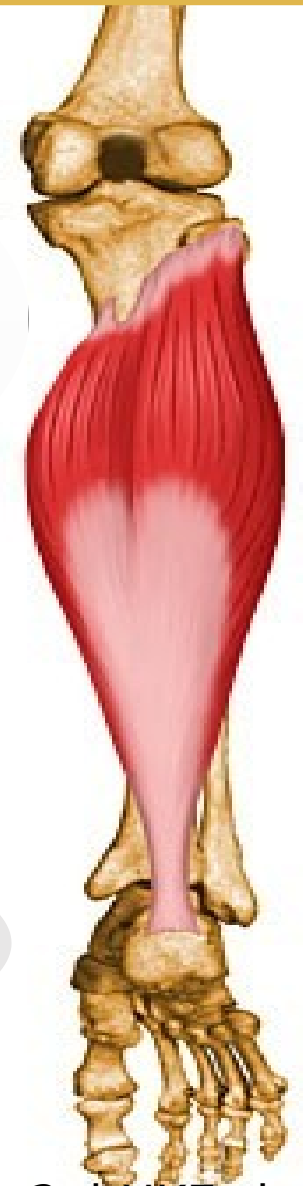
Upper $\frac{1}{4}$ of post.surface of fibula

Soleal line

Middle $\frac{1}{4}$ of medial border of tibia

Insertion

Middle $\frac{1}{3}$ of back of calcaneus



Plantaris

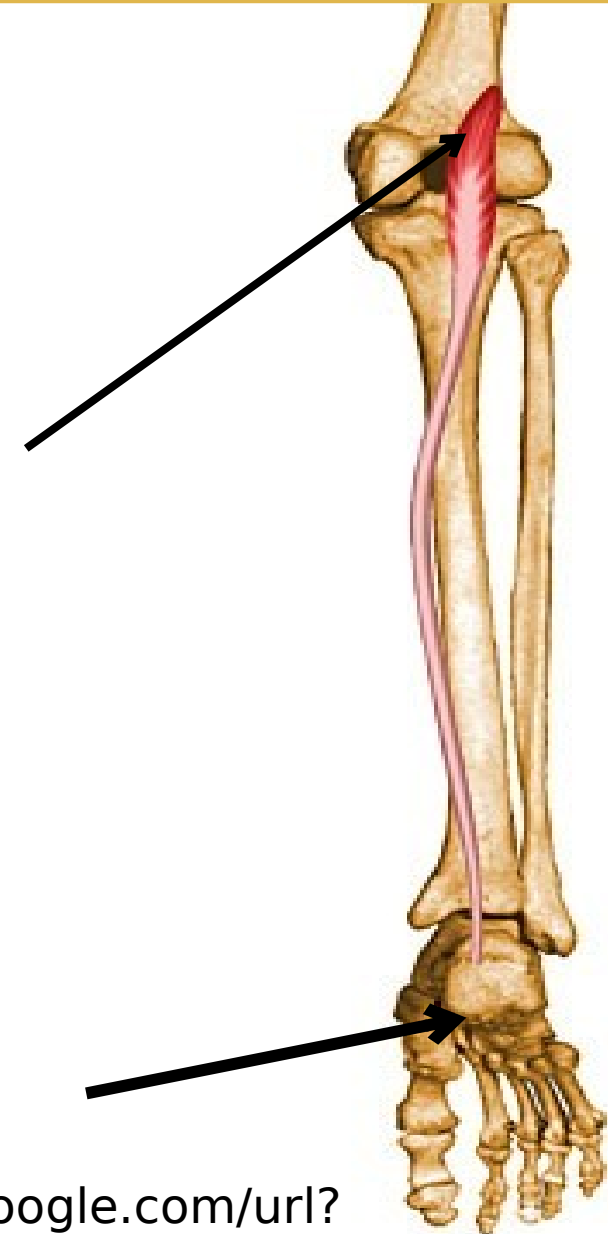


Origin

From lower part of
lateral supracondylar
line

Insertion

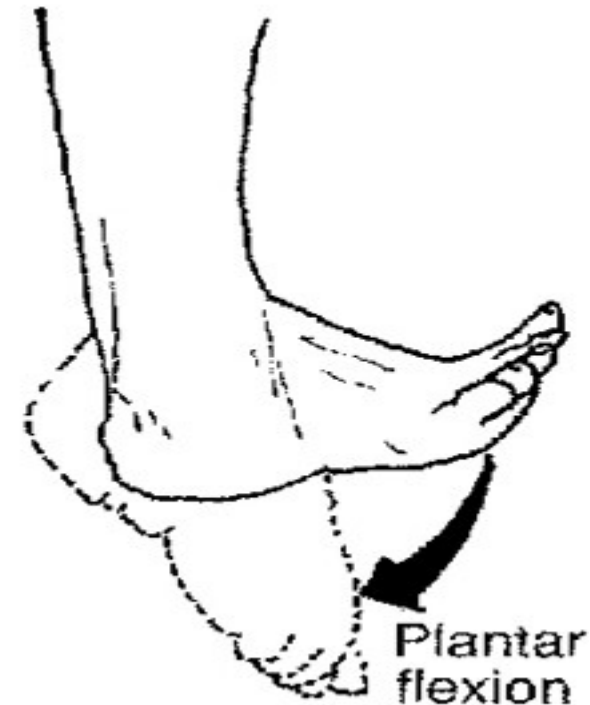
With the tendocalcaneus



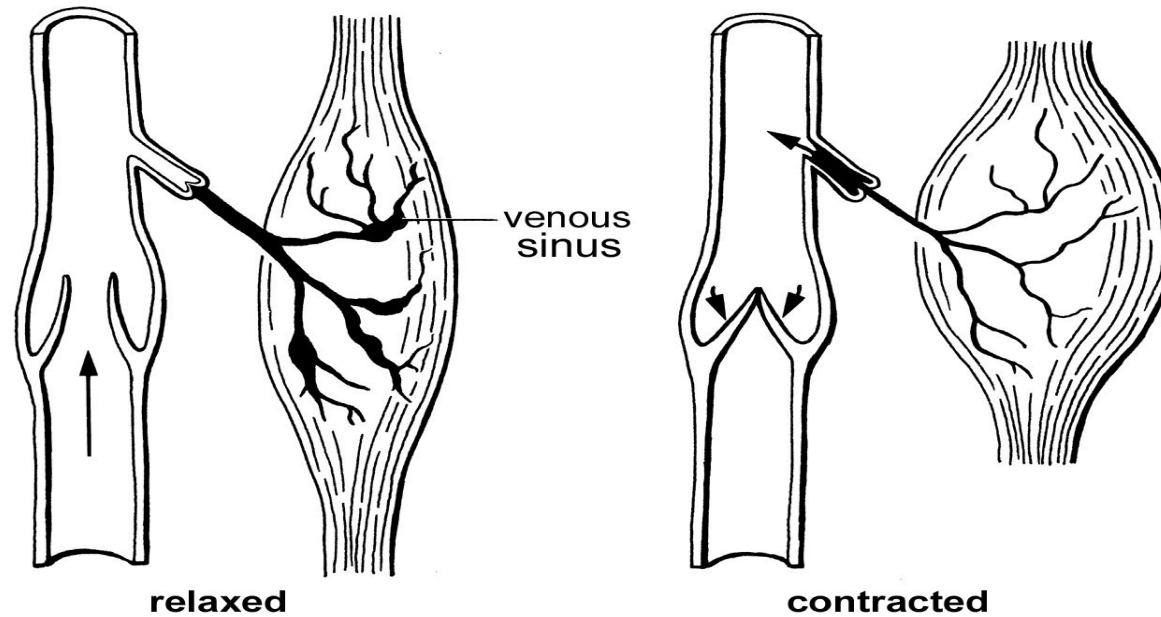
Action of muscles



- ❑ The superficial muscles of the calf are strong **planter flexors**
- ❑ **Stabilize** leg on foot in standing
- ❑ **Gastrocnemeus and plantaris are flexors of knee**
- ❑ Help in **venous** return



Action of muscles



Venous sinuses: effect of contraction of calf muscle

Contraction of calf muscles plays an important role in **venous return** from lower limb

https://www.google.com/imgres?imgurl=http%3A%2F%2Fwww.wsiat.on.ca%2Fimages%2Fmlo%2Fvenous_pump2.jTB4M

Action of muscles



Supracondylar fracture of the femur the popliteal artery may be injured by lower fragment of bone which is pulled by gastrocnemius

<https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwjDlp->



Popliteus

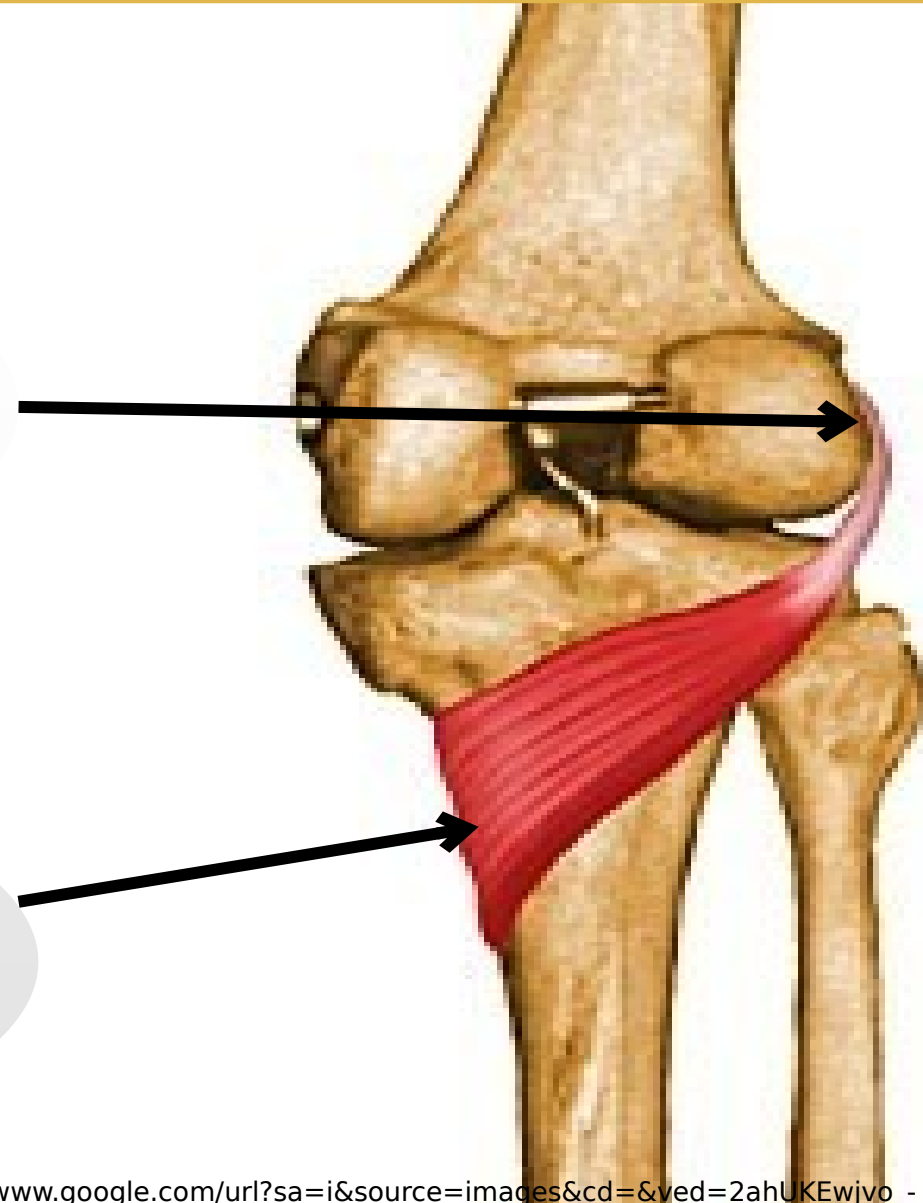


Origin

**Anterior end of
popliteal groove
On the lateral surface
of lateral femoral
condyle**

Insertion

**Posterior surface of
tibia above soleal line**



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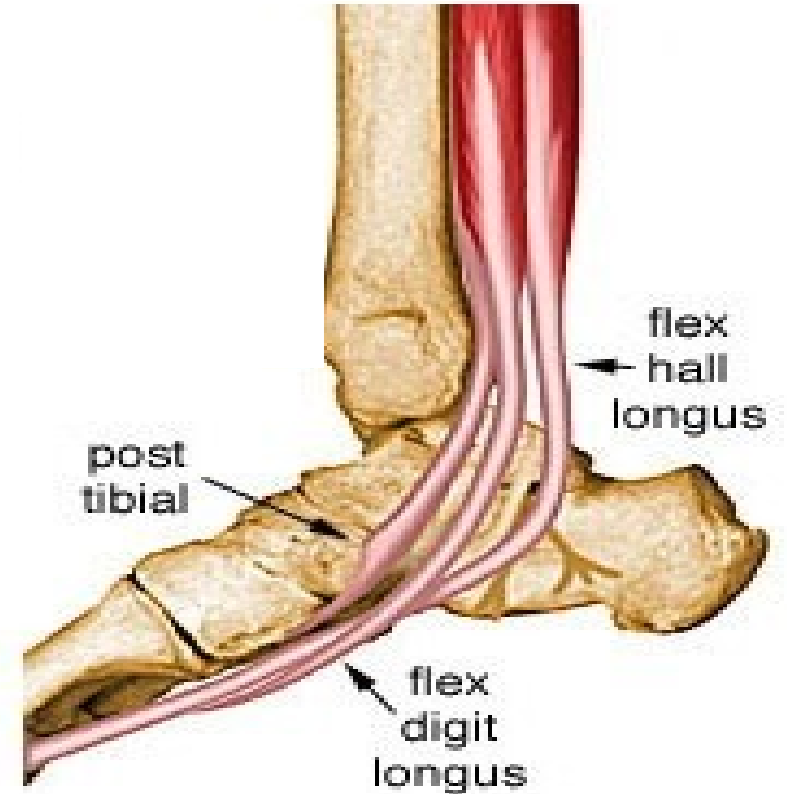
Flexor hallucis longus



Origin

From the
posterior surface
of fibula

Insertion
Distal phalanx of
big toe



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Flexor digitorum longus

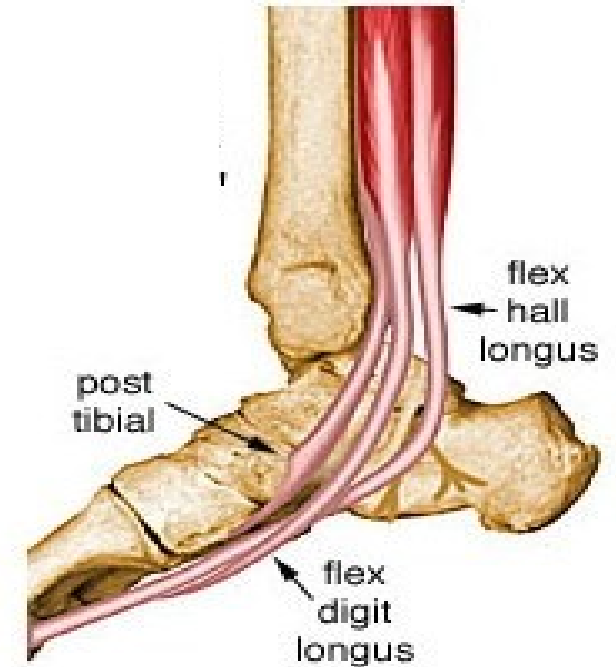
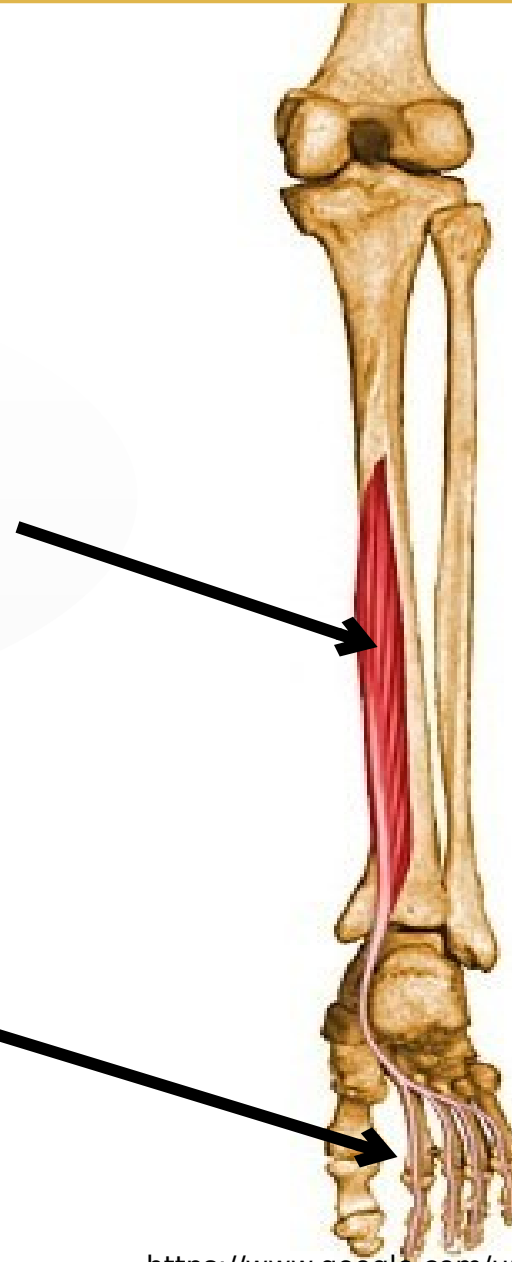


Origin

From the posterior surface of tibia below soleal line medial to the vertical line

Insertion

Distal phalanx of the lateral 4 toes

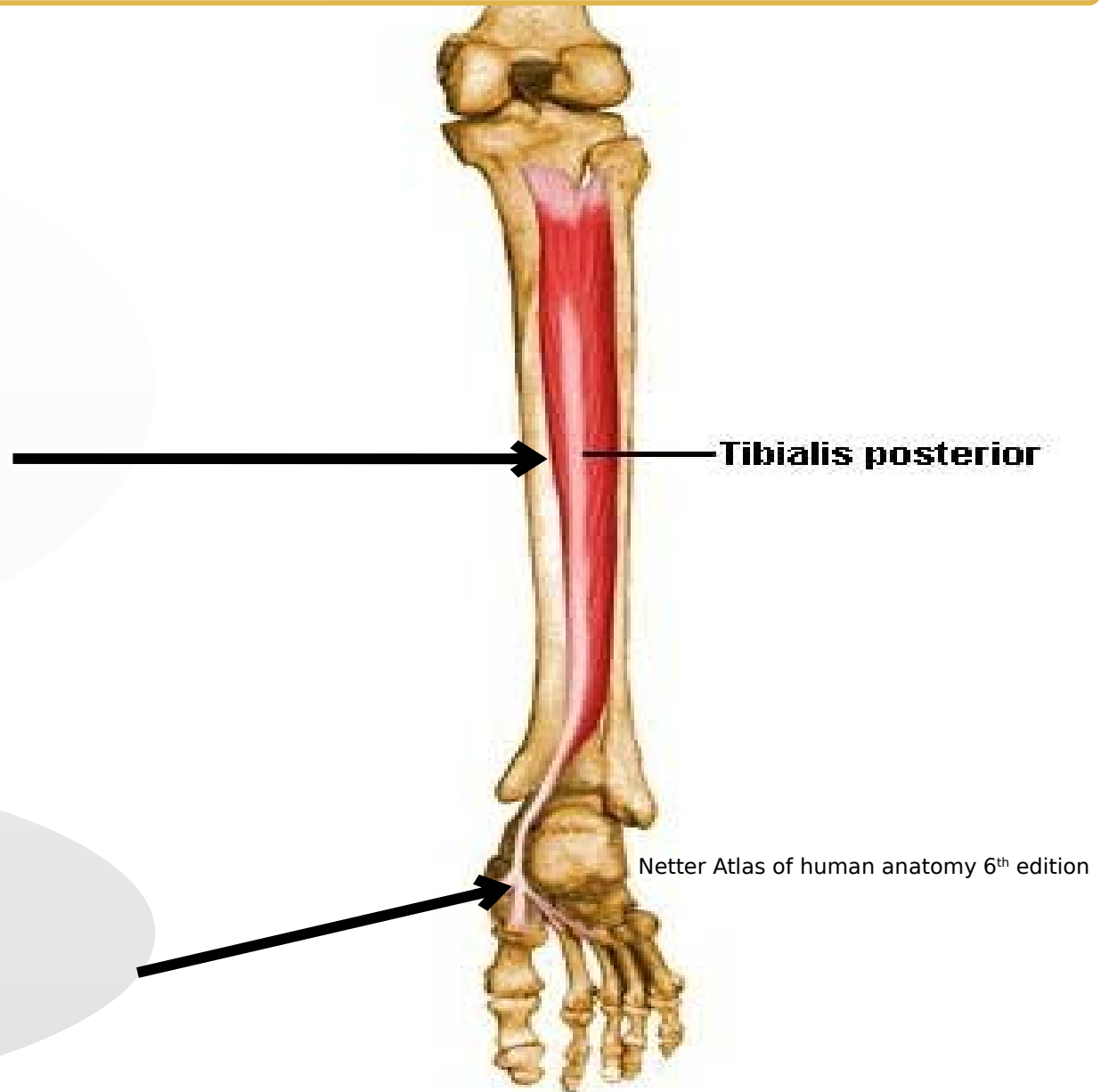


Tibialis posterior



Origin

From the posterior surface of tibia below soleal line lateral to the vertical line + posterior surface of fibula



Insertion

To all tarsal bone(except talus) & middle 3 metatarsal

Nerve supply of muscles of back of leg



**All the muscles are
supplied by **Tibial
nerve****



Action of popliteus

- Flex knee
- During initial flexion with foot on ground it produces lateral rotation of femur on tibia UNLOCKING the knee when leg is free it produces medial rotation of tibia on femur
- Prevent crush of lateral meniscus between femoral condyles by pulling it backwards

Action of flexor digitorum longus



Action of flexor digitorum longus

- **Flexion of metatarsophalangeal joints and interphalangeal joints of lateral 4 toes**
- assist in planter flexion
- Support longitudinal arch
- Maintain the toes in firm contact with the ground

Action of flexor hallucis longus



- Flexion of joints of big toe
- Assists in planter flexion of foot
- Supports medial longitudinal arch

Action of Tibialis posterior

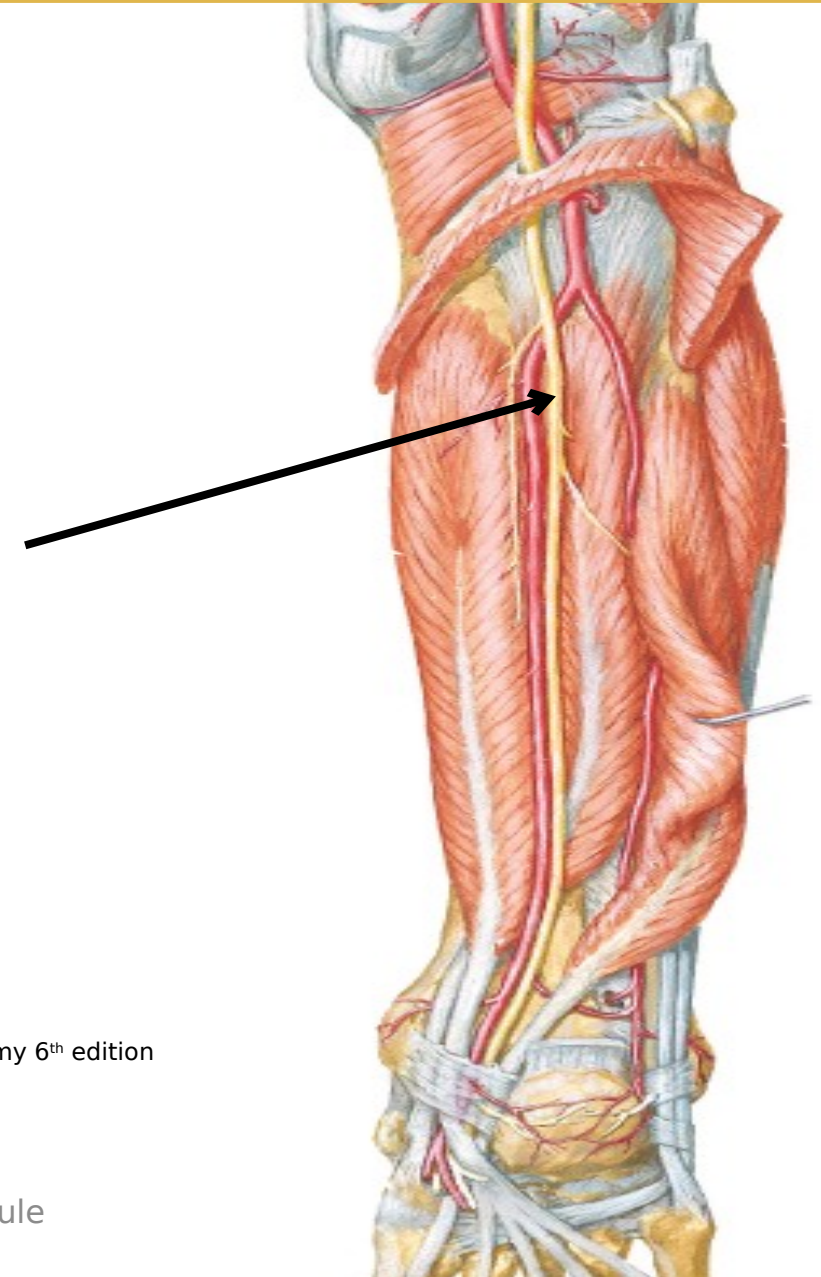


- Strong invertor
- Planter flexion
- Supports medial longitudinal arch
- Supports transverse arch

Tibial nerve

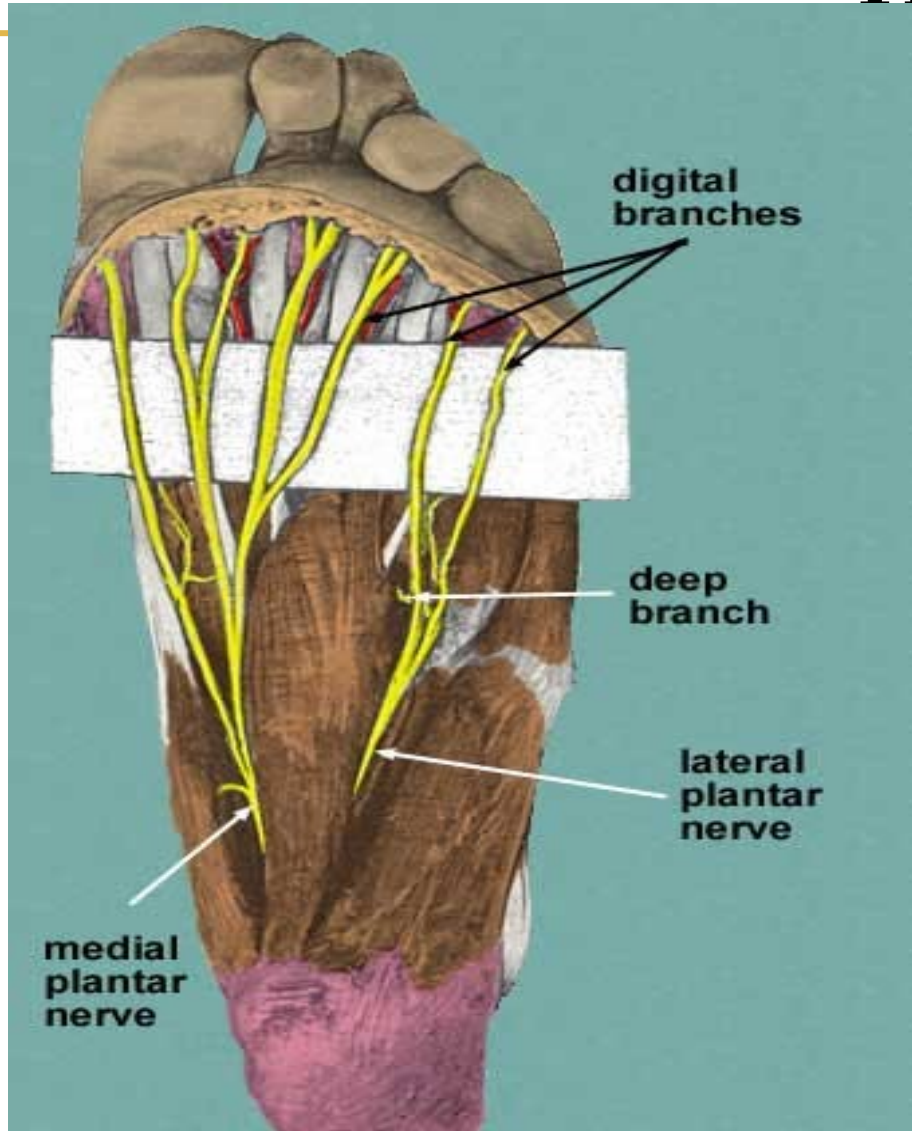


- ❖ It enters **the back** of the leg from the popliteal fossa at the **distal border of popliteus**
- ❖ It passes **deep** to the **soleus** muscle between the tibia and fibula .
- ❖ It supplies all the muscles of the **posterior compartment**.
- ❖ It ends **deep** to the flexor retinaculum by dividing into **medial and lateral planter nerves**.



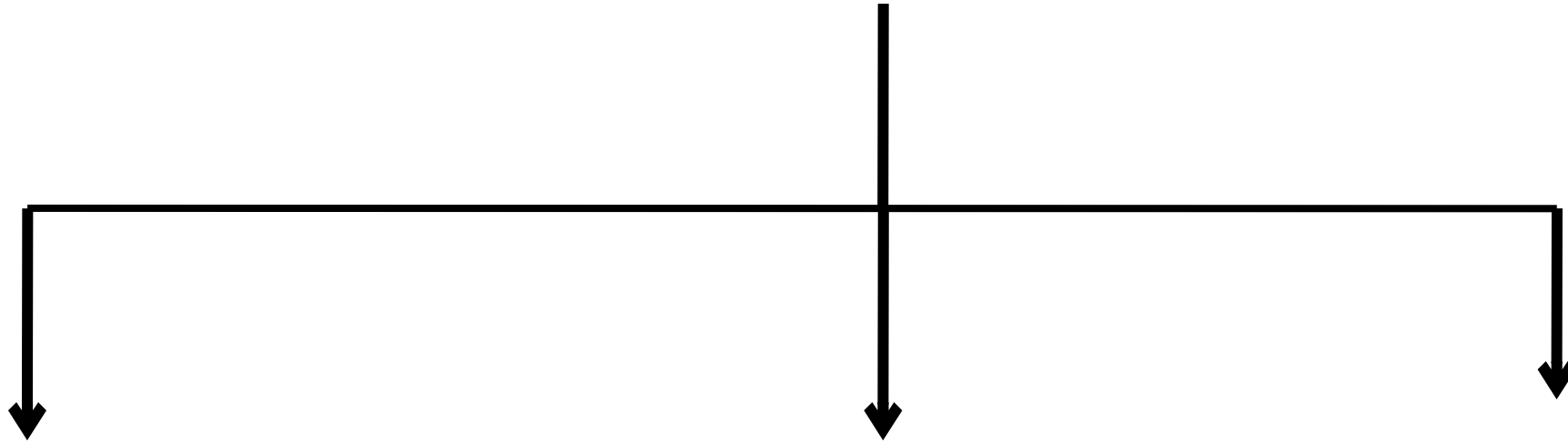
Netter Atlas of human anatomy 6th edition

Tibial nerve



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Branches of Tibial nerve



Cutaneous

Medial calcaneal
Supplies the posterior and lower surfaces of the heel and the medial side of the sole.

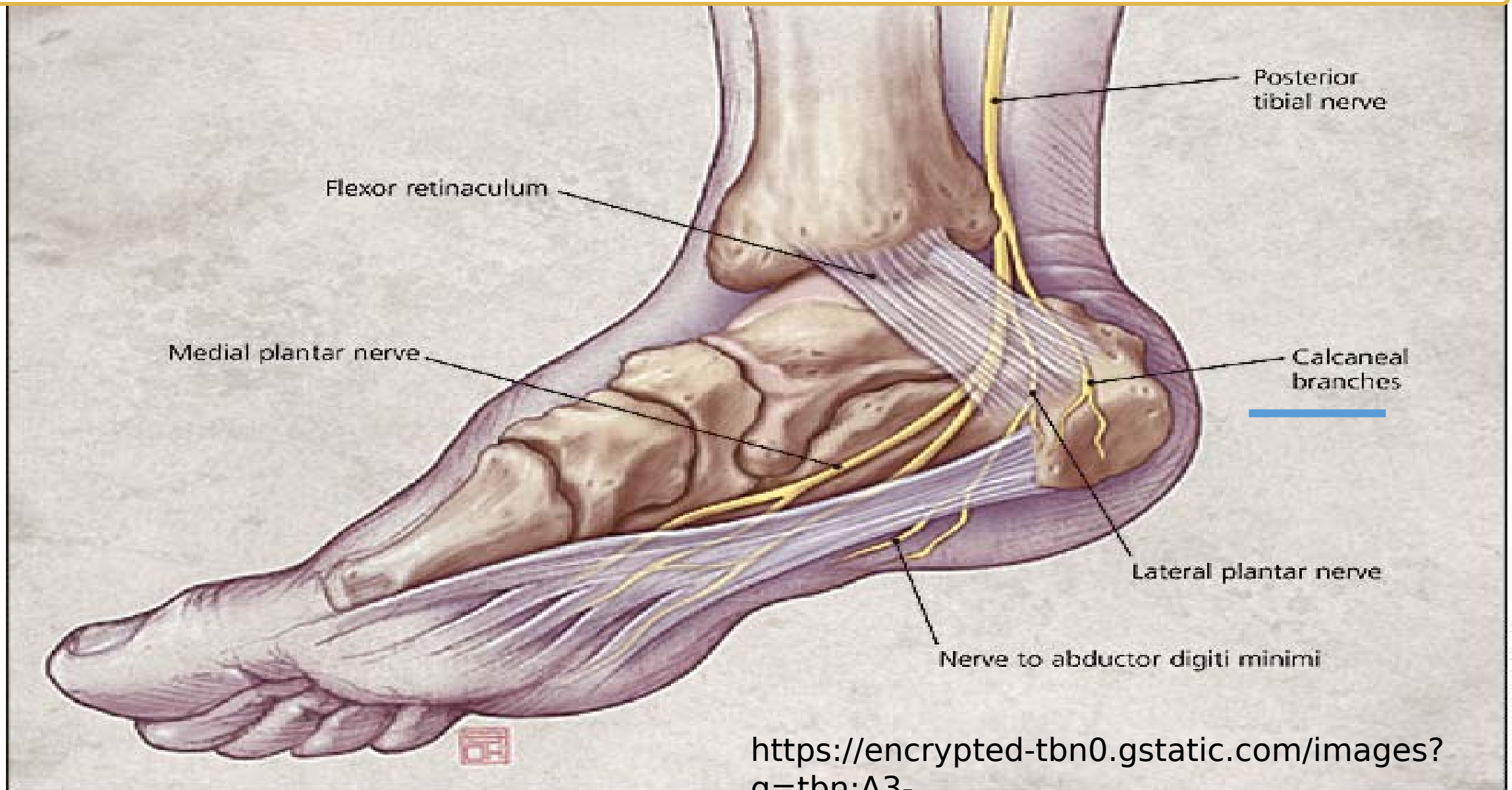
Articular

to ankle joint

Muscular

all muscles of the posterior compartment

Branches of Tibial nerve

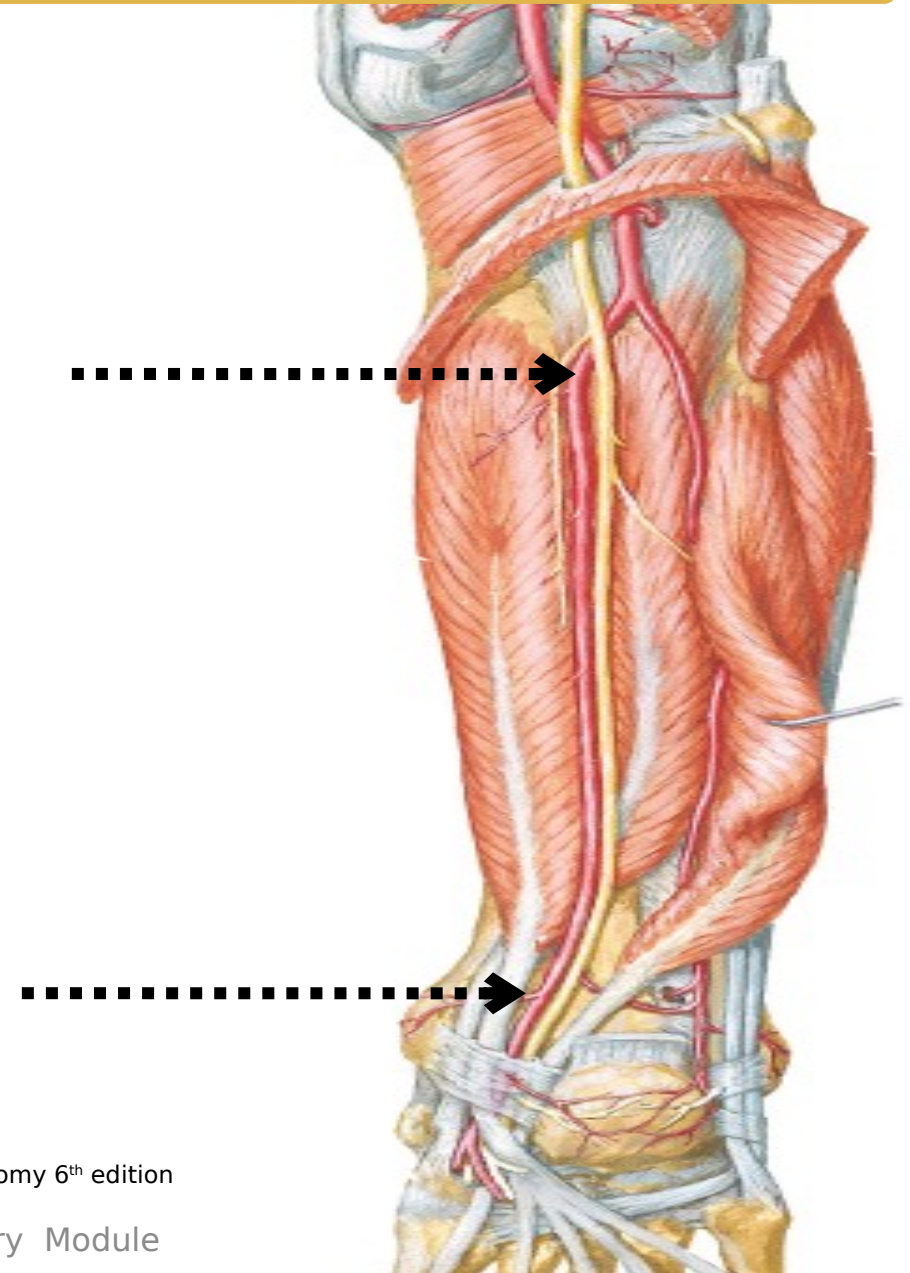


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Posterior tibial artery



- ❖ It is the **larger** of the two terminal branches of the popliteal artery .
- ❖ It passes under the **soleus** between the **tibia and fibula** & descends in the posterior compartment
- ❖ It ends **deep the flexor retinaculum** by dividing into **medial & lateral planter** arteries.



Netter Atlas of human anatomy 6th edition

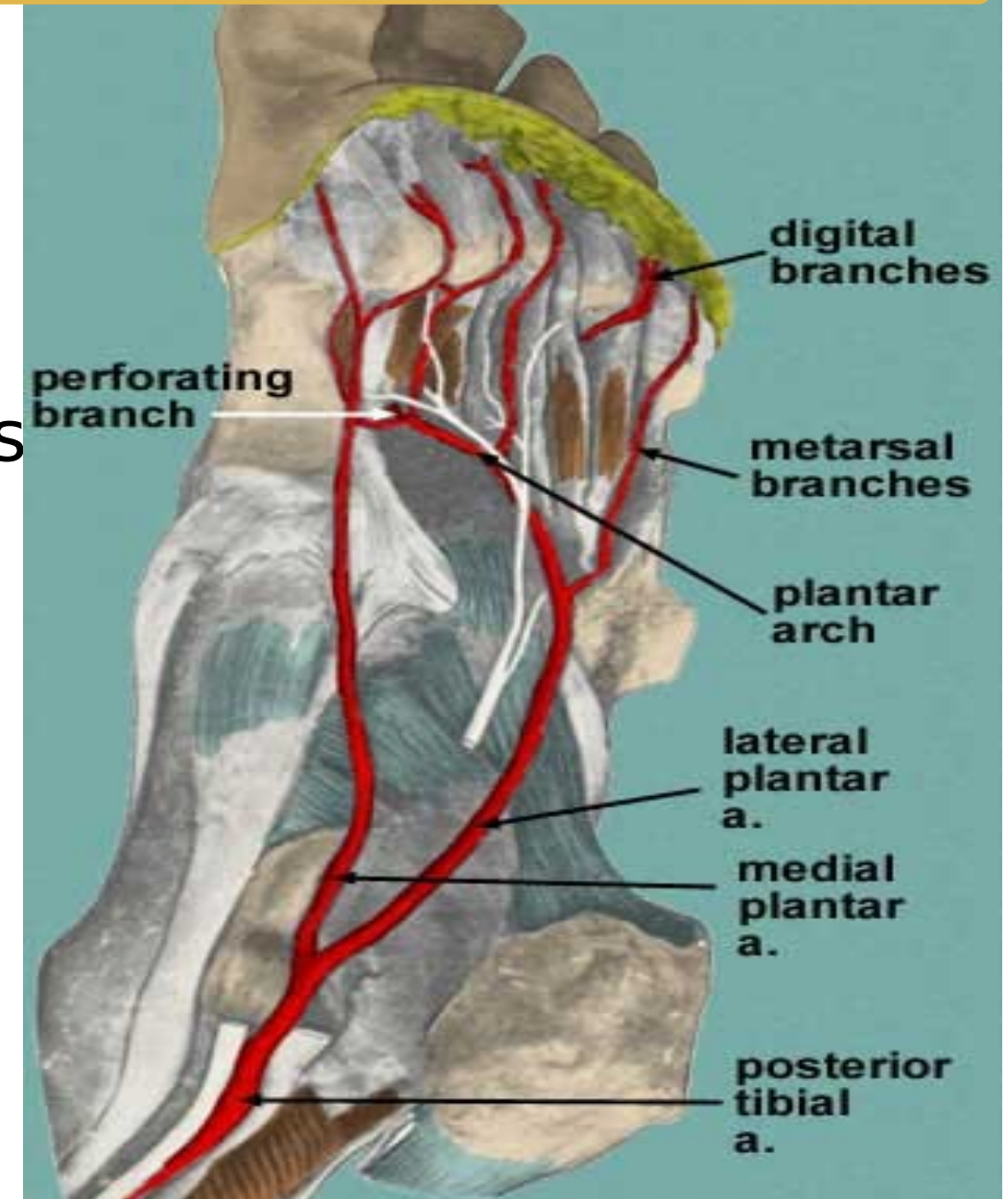
Musculoskeletal & Integumentary Module

Branches of posterior Tibial vessels



- ❖ **Muscular**
- ❖ **Nutrient** artery to the tibia
- ❖ **Communicating** branch which joins that of the peroneal artery.
- ❖ **Calcanean** branches
- ❖ **Medial malleolar** branch
- ❖ **Circumflex fibular** artery to knee joint .

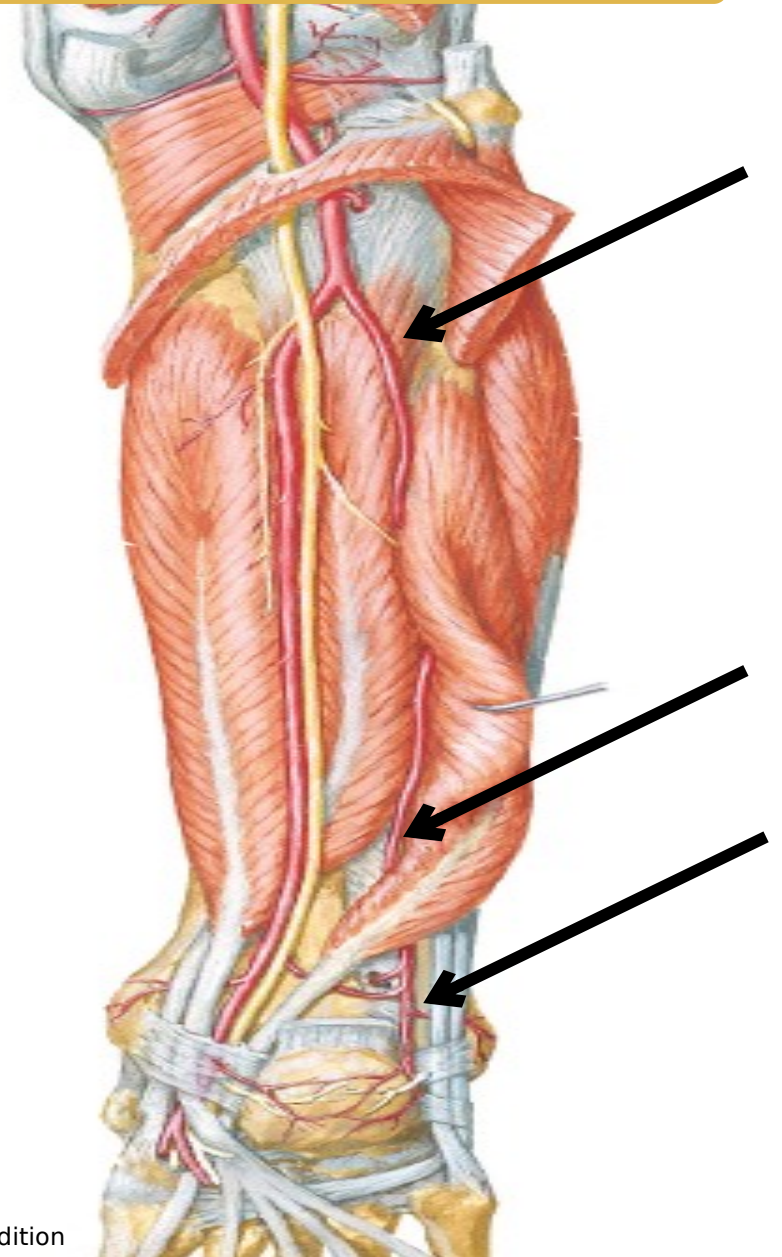
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Peroneal artery



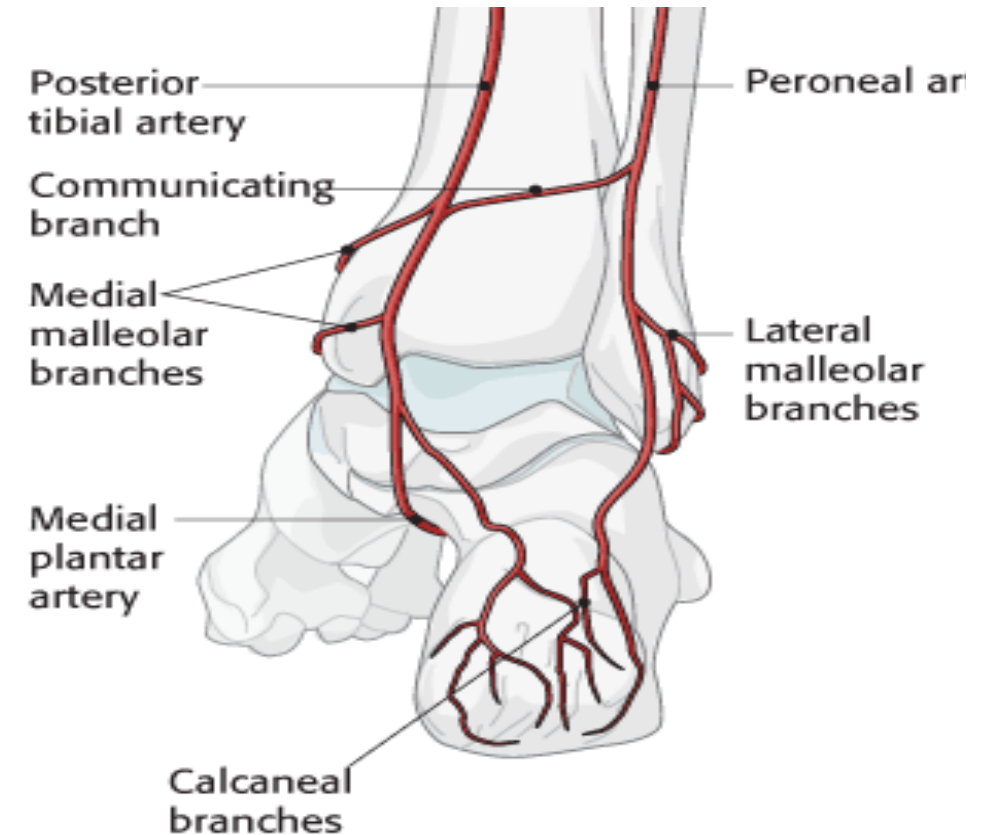
- ❖ It is the largest branch of post.tibial artery
- ❖ It descends along the **medial crest** of the fibula
- ❖ It terminates behind the **inferior tibiofibular joint** by giving **calcanean** branches.



Branches of Peroneal artery



- ❖ **Muscular**
- ❖ **Nutrient** artery to the fibula
- ❖ **Communicating** branch which joins that of the post.tibial artery.
- ❖ **Calcaneal** branches, join the calcaneal br.of post.tibial artery .
- ❖ **Perforating branch** :it reaches the ant. compartment to anastomose around the lateral malleolus.



https://www.google.com/imgres?imgurl=https%3A%2F%2Fupload.orthobullets.com%2Ftopic%2F12114%2Fimages%2Fperoneal_artery.jpg&imgrefurl=h

Lecture Quiz



Question 1 unlocking of knee is an action of which of the following muscles

a) Plantaris

b) Popliteus

c) Tibialis posterior

Question 2

Enumerate branches of peroneal artery

Question 3

what are the two terminal branches of posterior tibial nerves

SUGGESTED TEXTBOOKS



Clinical anatomy by regions 9th edition by Richard Snell

A close-up photograph of a bouquet of white tulips. The flowers are in various stages of bloom, with some fully open and others still in bud. The green leaves are long and pointed, interspersed among the white petals. The background is a soft, out-of-focus light color, creating a gentle and pleasant atmosphere.

Thank you